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CERTIFICATE OF MAILING PURSUANT TO C.F.R. §1.8

I hereby certify that this Request for Certificate of Correction is being deposited with the United States Postal Service this date, in an envelope addressed to Certificate of Correction Branch, Commissioner for Patents, PO Box 1450, Alexandria, VA 22313-1450.

Date: 10-17-2005 By: Julie A. Eslick
Signature of Person Depositing Mail

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

-- PATENT --

Patentee:	Kenichi TERAI, et al.	Docket No:	28569.8100
Serial No.:	09/776,480	Filed:	Feb. 2, 2001
Patent No.:	US 6,944,309 B2	Issued:	Sept. 13, 2005
Art Unit:	2643	Examiner:	Stella L. Woo
Title:	HEADPHONE SYSTEM	Conf. No.:	7134

REQUEST FOR CERTIFICATE OF CORRECTION

Certificate of Correction Branch
Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

Dear Honorable Commissioner:

Certificate

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of Correction

Under 37 C.F.R. §1.322, Patentee requests a Certificate of Correction be issued to correct the following clerical or typographical errors, which were made by the U.S. Patent and Trademark Office.

In the Claims:

In claim 1, the last word of the claim should read "speakers" not "sneakers".

A copy of the Response to Office Action submitted November 3, 2004 and as allowed is attached to this Request. Registrant respectfully requests that the Patent Office grant this Request and issue a Certificate of Correction editing the claims as were allowed. **Under the provisions of C.F.R. §1.322, there is no fee for the Certificate of Correction due to the error having been made by the U.S. Patent and Trademark Office. However, if it is found that a fee is due, the Office is authorized to charge Deposit Account No. 19-2814 and to advise the undersigned accordingly.**

If there are any questions or unresolved issues, the undersigned would welcome a telephone call to the number shown below.

Respectfully submitted,

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CERTIFICATE OF FAX/TELEFACSIMILE/MAILING PURSUANT TO 37 C.F.R. §1.8

I hereby certify that this correspondence, along with any accompanying documents, pursuant to 37 C.F.R. §1.8, are being sent via facsimile to (703) 872-9306 with a confirmation copy deposited with the United States Postal Service via First Class mail addressed to: Mail Stop Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Date: Nov. 3, 2004

By: Stella L. Woo

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
PATENT**

Assignee: Matsushita Electric Industrial Co., Ltd. Docket No.: 28569.8100

Inventors(s)/ U.S. Filing Date: February 2, 2001

Applicant(s): Kenichi TERAI, et al.

Date:

Serial No.: 09/776,480

Art Unit: 2643

TITLE: HEADPHONE SYSTEM

Examiner: Stella L. Woo

RESPONSE TO OFFICE ACTION

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Honorable Commissioner:

In response to the Office Action dated June 3, 2004, please consider the following amendments and remarks. This Response is being filed within 5 months of the mailing date of the Office Action, so that a 2 month extension of time is requested for replying.

IN THE CLAIMS

Please amend claim 1 as follows:

1. (CURRENTLY AMENDED) A headphone system, comprising:

a headphone; and

a signal processing circuit for outputting an acoustic signal to the headphone, wherein the headphone includes:

a first speaker and a third speaker for a right ear of a listener,

a second speaker and a fourth speaker for a left ear of the listener, and

a support for supporting the first through fourth speakers so that the first and second speakers are located forward with respect to a vertical plane including a straight line connecting the hole of the right ear and the hole of the left ear of the listener, the third and fourth speakers are located rearward with respect to the vertical plane, and the first through fourth speakers are out of contact with the right ear and the left ear of the listener;

wherein the signal processing circuit utilizes transfer function correction coefficients which may be varied to correct for individual differences among different listeners to allow each of the different listeners to more correctly recognize a virtual sound source imaged by the speakers.

2. (ORIGINAL) A headphone system according to claim 1, wherein the signal processing circuit outputs an acoustic signal, for causing the listener to recognize a front sound source located forward with respect to the listener, to the first and second speakers.

3. (ORIGINAL) A headphone system according to claim 1, wherein the signal processing circuit outputs an acoustic signal, for causing the listener to recognize a rear sound source located rearward with respect to the listener, to the third and fourth speakers.

4. (ORIGINAL) A headphone system according to claim 1, wherein the signal processing circuit outputs, among acoustic signals for causing the listener to recognize a rear sound source, acoustic signals having a frequency of a prescribed frequency f_i or lower to the first and second speakers, and outputs acoustic signals having a frequency of the prescribed frequency f_i or higher to the third and fourth speakers.

5. (ORIGINAL) A headphone system according to claim 1, wherein the signal processing circuit outputs, among acoustic signals for causing the listener to recognize a front sound source, acoustic signals having a frequency of a prescribed frequency f_i or higher to the first and second speakers, and outputs acoustic signals having a frequency of the prescribed frequency f_i or lower to the third and fourth speakers.

6. (ORIGINAL) A headphone system according to claim 1, wherein the first and second speakers are located rearward with respect to a vertical plane including a straight line connecting a right eye and a left eye of the listener.

7. (ORIGINAL) A headphone system according to claim 1, wherein the third speaker is located so that an angle between a straight line straight ahead direction of the listener and a vertical line running through the center of a front surface of the third speaker is in the range of about 100 degrees to about 120 degrees, and the fourth speaker is located so that an angle between the straight line in the straight ahead direction of the listener and a vertical line running through the center of a front surface of the fourth speaker is in the range of about 100 degrees to about 120 degrees.

8. (ORIGINAL) A headphone system according to claim 1, wherein the headphone further includes a low frequency-dedicated speaker for reproducing only audio signals in a low frequency band.

9. (ORIGINAL) A headphone system according to claim 8, wherein the low frequency-dedicated speaker is located in the vicinity of a rear part of the head of the listener, when the headphone is worn.

10. (ORIGINAL) A headphone system according to claim 8, wherein the low frequency-dedicated speaker is located in the vicinity of the top of the head of the listener, when the headphone is worn.

11. (ORIGINAL) A headphone system according to claim 1, wherein the headphone further includes a vibration unit for vibrating based on a dedicated low frequency band signal used for reproducing only audio signals in a low frequency band, and the vibration unit is supported so as to be in close contact with a temporal region of the head of the listener, when the headphone is worn.

12. (ORIGINAL) A headphone system according to claim 1, wherein:

the support includes a first supporting member for supporting the first and third speakers and a second supporting member for supporting the second and fourth speakers,

the third speaker and the first supporting member are connected through a first connecting portion so that the third speaker is rotatable about the first connecting portion, and

the fourth speaker and the second supporting member are connected through a second connecting portion so that the fourth speaker is rotatable about the second connecting portion.

13. (ORIGINAL) A headphone system according to claim 1, wherein:

the headphone further includes a first reflection plate for reflecting sound radiating from the third speaker and a second reflection plate for reflecting sound radiating from the fourth speaker,

the third speaker is located so that a surface of a diaphragm of the third speaker includes a straight line connecting the hole of the right ear of the listener and the center of the third speaker, and the sound radiating from the third speaker and reflected by the first reflection plate reaches the right ear of the listener, and

the fourth speaker is located so that a surface of a diaphragm of the fourth speaker includes a straight line connecting the hole of the left ear of the listener and the center of the fourth speaker, and the sound radiating from the fourth speaker and reflected by the second reflection plate reaches the left ear of the listener.

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REMARKS

The Office rejects claims 1-12 and objects to claim 13 in the subject application. Applicant amends claim 1. Claims 1-13 (1 independent claim and 13 total claims) remain pending in the application.

Support for the amendment may be found in the originally filed specification, claims, and figures. No new matter has been introduced by these amendments. For example, support for amended claim 1 can be found in paragraphs [0060] to [0076]] (or pages 12-15) of the subject application.

Reconsideration of this application is respectfully requested.

35 U.S.C. §102 REJECTIONS

The Office rejects claims 1-3, 6, and 7 under 35 U.S.C. §102(b) as allegedly being anticipated by Verdick.¹ Applicant respectfully traverses the rejection.

Verdick fails to disclose "the signal processing circuit utilizes transfer function correction coefficients which may be varied to correct for individual differences among different listeners to allow each of the different listeners to more correctly recognize a virtual sound source imaged by the speakers" as recited in claim 1 (and claims 2, 3, 6, and 7, which variously depend from claim 1).

Verdick discloses a head mounted speaker assembly 80 attached to a multi-channel processor 70.² Verdick focuses on providing a surround sound atmosphere with as few speakers as possible in a room.³ The Verdick system provides discreet sound positioning for side and height localization to approximate realistic situations.⁴ But processor 70 in Verdick does not utilize "transfer function correction coefficients which may be varied to correct for individual differences among different listeners to allow each of the different listeners to more correctly recognize a virtual sound source imaged by the speakers" as recited in claim 1.

Thus, claims 1-3, 6, and 7 are patentable over Verdick.

¹ U.S. Patent No. 5,684,879, issued November 4, 1997.

² Verdick, column 3, lines 55-59.

³ Verdick, column 2, lines 10-15.

⁴ Verdick, column 2, lines 50-56.

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35 U.S.C. § 103 REJECTIONS

Verdick and Yoshimura References

The Office rejects claims 4 and 5 under 35 U.S.C. §103(a) as allegedly being unpatentable over Verdick in view of Yoshimura⁵. Applicant respectfully traverses the rejection.

With reference to the foregoing discussion in connection with claim 1 and the Verdick reference, claims 4 and 5 (which depend from claim 1) are also patentable over Verdick in view of Yoshimura.

Yoshimura discloses a four-channel headphone subsystem, where front and rear driver units should be separated as far away as possible (so that only high-pitched tones can be sensed). A woofer 3 is located in the center, driver units 4 and 5 are located in front of and behind woofer 3, and walls 7 and 8 are located between woofer 3 and units 4 and 5. This location of elements in Yoshimura prevents the mixing of front and rear medium to high range tones until they reach the listener's ear canal.⁶

But Verdick in view of Yoshimura fails to teach, advise, or suggest "the signal processing circuit outputs...acoustic signals having a frequency of a prescribed frequency f_1 or lower to the first and second speakers, and outputs acoustic signals having a frequency of the prescribed frequency f_1 or higher to the third and fourth speakers" as recited in claim 4. Verdick in view of Yoshimura also fails to teach, advise, or suggest "the signal processing circuit outputs...acoustic signals having a frequency of a prescribed frequency f_1 or higher to the first and second speakers, and outputs acoustic signals having a frequency of the prescribed frequency f_1 or lower to the third and fourth speakers" as recited in claim 5.

Yoshimura separates units 4 and 5, so that only high-pitched tones can be sensed. The physical location of woofer 3, units 4 and 5, and walls 7 and 8 prevent the mixing of front and rear medium to high range tones until they reach the listener's ear canal. But these features in Yoshimura do not disclose a signal processor outputting acoustic signals having the prescribed frequencies to the speakers as recited in claims 4 and 5.

Thus, claims 4 and 5 are patentable over Verdick in view of Yoshimura.

⁵ U.S. Patent No. 3,984,885, issued October 12, 1976.

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Verdick and Nagayoshi References

The Office rejects claims 8 and 9 under 35 U.S.C. §103(a) as allegedly being unpatentable over Verdick in view of Nagayoshi⁷. Applicant respectfully traverses the rejection.

With reference to the foregoing discussion in connection with claim 1 and the Verdick reference, claims 8 and 9 (which variously depend from claim 1) are also patentable over Verdick in view of Nagayoshi.

Nagayoshi discloses a headphone 10 with a vibration generating unit 14 (to be placed on the back of the neck of a user). Unit 14 provides vibrations to the back part of the neck (simultaneously with acoustic sound from sound generating units 16).⁸

But Verdick in view of Nagayoshi fails to teach, advise, or suggest "the headphone further includes a low frequency-dedicated speaker for reproducing only audio signals in a low frequency band" as recited in claim 8. Unit 14 in Nagayoshi provides vibrations and unit 16 in Nagayoshi provides acoustic sound. However, neither include a low frequency-dedicated speaker for reproducing only audio signals in a low frequency band.

Verdick in view of Nagayoshi also fails to teach, advise, or suggest "the low frequency-dedicated speaker is located in the vicinity of a rear part of the head of the listener, when the headphone is worn" as recited in claim 9. Unit 16 provides acoustic sound, but unit 16 is not located in the vicinity of a rear part of the head of the listener, when the headphone is worn.

Thus, claims 8 and 9 are patentable over Verdick in view of Yoshimura.

⁶ Yoshimura, column 2, lines 39-56).

⁷ U.S. Patent No. 6,603,863, issued August 5, 2003.

⁸ Nagayoshi, Abstract and column 8, lines 57-65.

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Verdick, Nagayoshi, and Lensing References

The Office rejects claim 10 under 35 U.S.C. §103(a) as allegedly being unpatentable over Verdick in view of Nagayoshi as applied to claim 8 and further in view of Lensing⁹. Applicant respectfully traverses the rejection.

With reference to the foregoing discussions in connection with claim 1 and the Verdick reference and claim 8 and the Nagayoshi reference, claim 10 (which variously depends from claims 1 and 8) is also patentable over Verdick in view of Nagayoshi and Lensing.

The Office relies on the abstract and a figure of the Lensing reference for this Office Action. Applicant submits that 37 C.F.R. § 1.2 requires that all "business with the Patent and Trademark Office should be transacted in writing" and that "the action of the Patent and Trademark Office will be based exclusively on the written record in the Office". Accordingly, because the Lensing reference is not in English and not part of the written record, this Response is based solely on the Verdick and Nagayoshi references. If the Office wishes to rely on the Lensing reference or other non-English aspects, Applicant requests re-issuance of a non-final office action including an English translation of the Lensing reference as part of the written record. Applicant respectfully traverses the rejection.

Verdick and Papiernik References

The Office rejects claim 11 under 35 U.S.C. §103(a) as allegedly being unpatentable over Verdick in view of Papiernik¹⁰. Applicant respectfully traverses the rejection.

With reference to the foregoing discussion in connection with claim 1 and the Verdick reference, claim 11 (which depends from claim 1) is also patentable over Verdick in view of Papiernik.

Papiernik discloses vibrational audio output discs positioned adjacent to the temples of the user to provide an enhanced acoustical effect.¹¹ But Verdick in view of Papiernik fails to teach, advise, or suggest "a vibration unit for vibrating based on a

⁹ DE 26 08 908, September 8, 1977.

¹⁰ U.S. Patent No. 4,821,323, issued April 11, 1989.

¹¹ Papiernik, column 2, lines 33-37.

dedicated low frequency band signal used for reproducing only audio signals in a low frequency band" as recited in claim 11.

Thus, claim 11 is patentable over Verdick in view of Papiernik.

Verdick and Inanaga References

The Office rejects claim 12 under 35 U.S.C. §103(a) as allegedly being unpatentable over Verdick in view of Inanaga¹². Applicant respectfully traverses the rejection.

With reference to the foregoing discussion in connection with claim 1 and the Verdick reference, claim 12 (which depends from claim 1) is also patentable over Verdick in view of Inanaga.

Inanaga discloses a headphone unit 142 that can be adjusted to rotate at an arbitrary angle relative to a headband 141 of a headphone 140.¹³ But Verdick in view of Inanaga fails to teach, advise, or suggest "the support includes a first supporting member for supporting the first and third speakers and a second supporting member for supporting the second and fourth speakers" as recited in claim 11.

¹² U.S. Patent No. 5,761,314, issued June 2, 1998.

¹³ Inanaga, column 29, lines 24-27.

CONCLUSION

Thus, the Applicant respectfully submits that the present application is in condition for allowance. Reconsideration of the application is thus requested. Applicant invites the Office to telephone the undersigned if he or she has any questions whatsoever regarding this Response or the present application in general.

Respectfully submitted,

By: S. Shahpar 11-3-04
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